Optimizing No-Till Decisions Using Your Precision Data

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Goals

- Discover ag technology to enhance your farming practices.
- Learn how to collect and organize data.
- Discern best practices for data sets to help you make operational decisions.

Minimal Tillage Involves a Risk Management Strategy

- **Integrated Pest Management**
  - Prevention ++
  - ~~Mechanical~~
  - Chemical
  - ~~Cultural~~
  - Biological ++
- **Soil Temperature and Moisture Responsiveness**
  - Seed Placement Limitation
  - Warming Benefits of Tillage

Source types: https://ipm.ucanr.edu/GENERAL/whatisipmurban.html

Minimal Tillage Involves a Risk Management Strategy

NEWS RELEASE 7-FEB-2022

Soil tillage reduces availability of 'longevity vitamin' ergothioneine in crops

Peer-Reviewed Publication

PENN STATE

NEWS RELEASE 4-JUN-2020

Tillage and cover cropping effects on grain production

Peer-Reviewed Publication

AMERICAN SOCIETY OF AGRONOMY

NEWS RELEASE 31-JUL-2019

Overturning the truth on conservation tillage

Peer-Reviewed Publication

AMERICAN SOCIETY OF AGRONOMY

> After four years, researchers observed that yields rarely, if ever, differed among the four tillage systems at any of the farms. Still, change is never easy. The study by Daigh and his team suggests that adapting conservation tillage practices will not cause yield losses. In fact, conservation tillage practices will lower on-farm costs while preserving long-term productivity.

https://www.eurekalert.org/news-releases/942678

Equipment Management

- **Equipment Agronomics**
  - This also requires understanding that setting the equipment up right to reduce disturbance.
  - Monitor and set up alerts for real-time monitoring to make timely decisions.

“MANAGING RISK IS VERY DIFFERENT FROM MANAGING STRATEGY. RISK MANAGEMENT FOCUSES ON THE NEGATIVE THREATS AND FAILURES RATHER THAN OPPORTUNITIES AND SUCCESSES.”

- Robert S. Kaplan

Use Technology to Manage Risk

Data Management

- Automate data collection, even the data that does not feel important at that moment.
- Understand how to query the data to weed out data that doesn't add to your net positive.

Equipment Management

- Equipment adjustments should occur once or twice per field, not just once a year.
- Understand the "If this, then that" of equipment.

Technology Makes Data Management Easier for No-Till

- Know the data available to you from your field:
  - Understand "Spot Spraying" and how it determines it's on/off
  - Set up telematics and determine info is read
  - Consider onboarding a precision ag technology upgrade kit like John Deere's Automation 4.0
  - Align farm management with Variable Rate Management.

- Remember, the ROI might not be only what the sales guy says.
  - Example: Understand spot spraying = mode of action
  - Example: Autonomy isn't always about manpower
  - Example: Precision Technology creates a deeper understanding of the soil and seed genetics you regularly plant.

Initial Investment and Adoption Challenges

1. Access to effective training without a trusted partner
2. Further skill development for your workforce
3. Concerns about data security, privacy or access to data backups

No-Till Season Starts When...

“THE CHAMPIONSHIP TEAM AND THE LAST PLACE ALL START THE SEASON WITH THE SAME GOAL. BUT WHAT IS THE DIFFERENCE BETWEEN THE WINNING TEAM AND THE LAST PLACE TEAM?”

- Dori Clark

How to Choose a Farm Management Software

- The right one is the one you will use.
- The right one is the one you take the time to learn and continue to grow in proficiency.
- The right one is the one in which you can see growth.
- The right one is the one that allows you to easily obtain analytics.

Data Management Tips

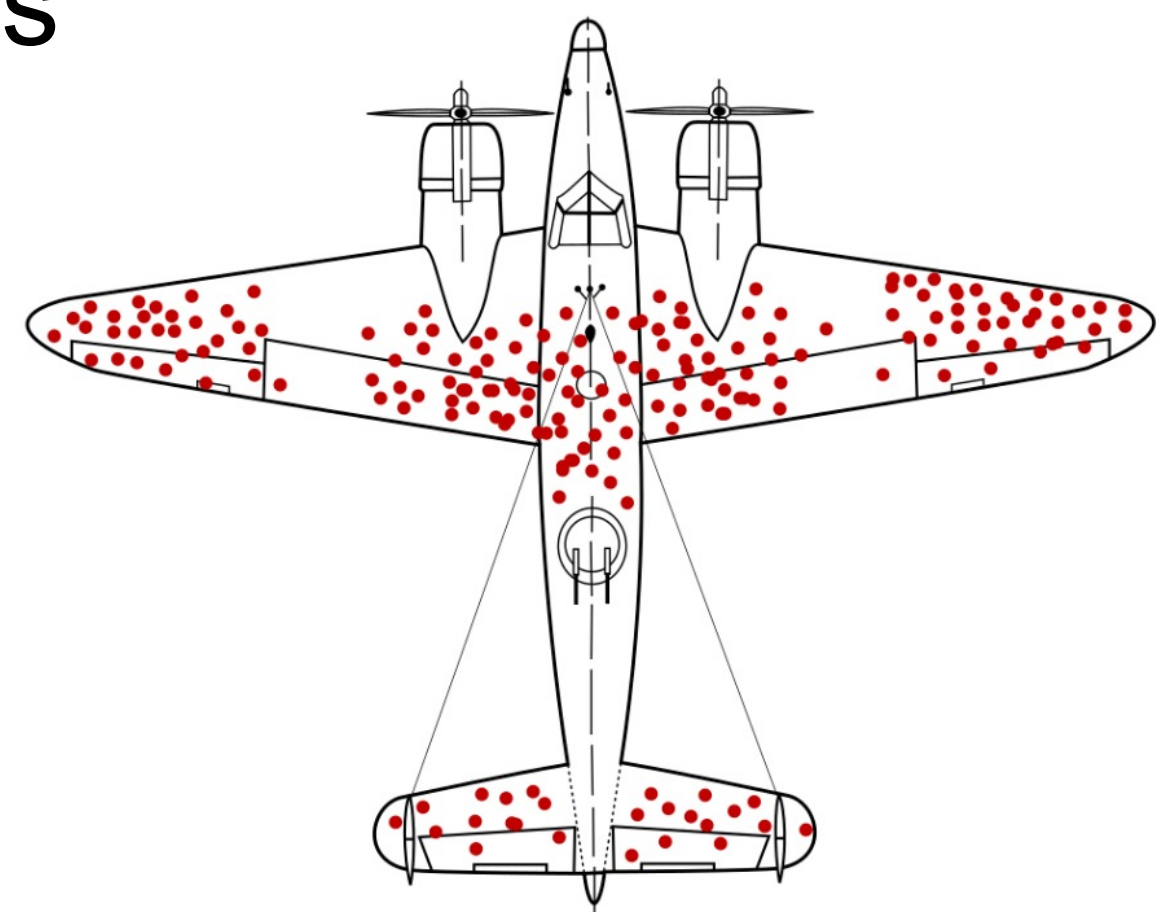
Data is on valuable if it is usable. Make sure it's in a format and system that works for you.

- What is your data's objective?
- How do you plan to back up your data?
- Understand how to get the data to change if your objective changes.

https://ohioline.osu.edu/factsheet/fabe-557

Data Management Tips

- **Effective data integration means managing data 365 days a year.**
  - Successful teams start by focusing on their weaknesses.
  - It is important to assess weaknesses where your measurements are taken.
  - The data you collect can vary depending on factors such as input changes or a shorter growing season.
  - Understand how to read the image as it changes throughout the season.



Monitor Data in Real-Time

- **The data must be both timely and quality to create effective analytics.**
  - Ask yourself: Which data will I collect that can be acted upon quickly, and which data will be long-term action?
    - Be prepared if the answer is not “this season.” and be patient.
    - Know that real-time data means you can collect it with little effort.
  - Ask yourself: Is it easy for everyone to get an answer from the data?

“WE ARE DROWNING IN INFORMATION, WHILE STARVING FOR WISDOM. THE WORLD HENCEFORTH WILL BE RUN BY SYNTHESIZERS, PEOPLE ABLE TO PUT TOGETHER THE RIGHT INFORMATION AT THE RIGHT TIME, THINK CRITICALLY ABOUT IT, AND MAKE IMPORTANT CHOICES WISELY.”

- E. O. Wilson

Farm Your Data in Winter

- **The year's tempo begins in the year prior.**
  - Start by reviewing analytics, and separate data by years.
  - Remove errant data and clean out displays.
  - Update software, removing access to data told old assistants.
  - Forecast crop response based on historical data.
  - Understand historical data to create effective if, then statements for changing scenarios.

Six-Step Approach to Maximize Agronomic Data's Value

1. Complete software updates.
2. Set goals for your data in January and edit them in May.
3. Review your data from the past year or two and ponder it.
4. Team members should set expectations and discuss desired data outcomes. (Ask: “What do you wish this could do?”)
5. Establish clear data standards and enforce them.
6. Create a standard data flow to streamline processes.
    - How will it go to and from the cab?
    - Who will audit it and make sure it’s coming in correctly?
    - How will you fix it if it’s wrong?

Understand Prescriptive Analytics

Recommending specific actions based on data analysis

Adjusting input rates for maximum efficiency

“IN AN INCREASINGLY COMPLEX WORLD, THE FRAGMENTED STATE OF KNOWLEDGE CAN BE SEEN AS ONE OF THE MOST PRESSING SOCIAL PROBLEMS OF OUR TIME.”

- Gregg Henriques

Start with Actionable Data

- Set your expectations to be acceptable for the stage you are in within your data journey.
  - Is it a S.M.A.R.T. (Specific, Measurable, Achievable, Relevant, and Time-Bound) goal?
- Know what a one-year goal is and what a five-year goal should be. Remember that the first couple of years of new data may not yield significant results.
- Build tools as you go and address and questions that arise along the way.

Start with Actionable Data

- Know when your season starts.
- Spend time with your dealership learning your farm management software.
- Build a suite of data in the software without learning the features of the software.
- Learn how to clean data as well as the practice of re-formatting and post-calibrating data.
- Build a playbook that works towards the highs and the lows.
- To discern if something underperformed or overperformed, it's necessary to have a well-planned approach and effective data management.

Data Cleaning Tips

- Data management is like the holiday lights in your life:
  - Some never take them down and deal with them
  - Some throw them in a ball and don't worry with them until next year
  - Some put them away meticulously and can use them without cursing and scaring the cat.

https://www.croplife.com/precision-tech/why-and-how-to-clean-agronomic-data/

Data Cleaning Tips

- Know your basic rescue treatments which will be software specific.
- Understand post calibration tools (e.g. calibration management).
- Know how formatting and reformatting can help you.
- For example, use the ARS Yield Editor.
- Know how to restore corrupted data. (Some steps are easier than others.)

https://www.croplife.com/precision-tech/why-and-how-to-clean-agronomic-data/

“MOST RECOGNIZED EXPERTS ACHIEVED SUCCESS NOT BECAUSE OF SOME SPECIAL GENIUS, BUT BECAUSE THEY LEARNED HOW TO PUT DISPARATE ELEMENTS TOGETHER AND PRESENT IDEAS IN A NEW AND MEANINGFUL WAY.”

- Dori Clark

Share Your Thoughts